Abstract

Currency and consistency requirements are specified as part of a query against a database that may contain replicated data that is updated asynchronously and therefore may not be completely up to date. The database system constructs query execution plans that include an input selection operator that verifies the currency of a replica and selects a subplan using the replica for execution only when the replica meets the query's currency constraints. It checks possible query execution plans at construction time against the query's consistency constraints and any plans that may produce a result not meeting the consistency constraints are rejected. In this way, the query result is guaranteed to satisfy the query's currency and consistency requirements.